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September 28, 2020

**VIA ELECTRONIC FILING**

The Honorable Jocelyn G. Boyd
Chief Clerk/Executive Director
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, SC 29210

**Re: Utility Integration Studies of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC (Pursuant to Commission Directive Order No. 2020-583)**
**Docket No. 2020-220-A (Duke Energy Carolinas, LLC)**
**Docket No. 2020-221-A (Duke Energy Progress, LLC)**

Dear Ms. Boyd:

Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP," together with DEC, the "Duke Utilities") respectfully submit these joint comments as directed by the Public Service Commission of South Carolina (the "Commission") in the Notice of Virtual Forum (the "Notice") issued on September 14, 2020 in the above-referenced dockets. The Duke Utilities also hereby provide notice of their intent to participate in the Virtual Forum scheduled for Tuesday, October 6, 2020. Mr. Glen Snider, Director of Resource Planning and Analytics, will represent DEC and DEP, along with the undersigned as counsel for DEC and DEP.

## I. Background

S.C. Code Ann. § 58-37-60 authorizes the Commission and ORS to initiate an independent study to evaluate the integration of emerging energy technologies. Act 62 provides that the study, referred to herein as the "Act 62 Integration Study," should "evaluate what is required for electrical utilities to integrate increased levels of renewable energy and emerging energy technologies while maintaining economic, reliable, and safe operation of the electricity grid in a manner consistent with the public interest." Act 62 further provides that each study should be utility-specific and be based on the balancing areas of each electrical utility. For DEC and DEP, this means the study must evaluate the entire South Carolina and North Carolina footprint of each utility.

## II. Comments

The scope of the Act 62 Integration Study is quite broad and could be interpreted to support a variety of work streams associated with studying renewable energy and emerging energy technologies. Given the latitude provided to the Commission and ORS by the General Assembly in developing the Act 62 Integration Study, the Commission could opt to conduct studies that explore a number of topics at a very high level or, alternatively, the Commission could opt to pick

several more discreet topics to explore at a very detailed level. Whether the Commission opts for the "high level" approach or the "deep dive" approach, it is important to remember that consultants each have individual areas of expertise and it is highly unlikely that one consultant could be retained that has the required expertise to study the variety of topics being considered by the Commission. Further, as to the selection of the consultant, it is important that the Commission (and the ORS, as applicable) selects a consultant that has real-world, practical experience in operating electric power systems, as opposed to only academic experience ***studying*** such systems.

Finally, the Duke Utilities believe it is important that the Commission determine the proper scope of work for each study on a utility-by-utility basis, as contemplated for under Act 62. As is described herein, the Duke Utilities have engaged third-party consultants to conduct significant studies that are planned and/or already begun that are similar or identical to the work contemplated under the Act 62 Integration Study. The results of these studies will inform the Duke Utilities' filings or proposals that are, or will soon be, before this Commission in various existing or future dockets (i.e., Integrated Resource Plans ("IRP"), future avoided cost filings, and future energy efficiency program filings).

a. Technical Review of the Solar Ancillary Services Study

The Solar Ancillary Services Study is a narrow and detailed study conducted by Astrapé Consulting for the Duke Utilities in 2018 that examines certain specific physical reliability and financial impacts intermittent solar resources have on the power system with respect to balancing the power grid in real time on a minute-to-minute and hour-to-hour basis. The Solar Ancillary Services Study informs the solar integration services charge ("SISC") for DEC and DEP. This study and the resulting SISC was presented to the Commission in the Duke Utilities' 2019 Avoided Cost proceeding in Docket Nos. 2019-185-E and 2019-186-E ("Duke SC 2019 Avoided Cost Proceeding"). Through the Settlement Agreement approved by the Commission in that docket, wherein the parties agreed to the Duke Utilities' proposed SISC, DEC and DEP committed to submitting the study methodology of the Solar Ancillary Services Study to an independent technical review and to include the results of that review into the next avoided cost filing, to occur in the Fall of 2021.[1] Moreover, the North Carolina Utilities Commission ("NCUC") (which also approved the SISC) ordered the Duke Utilities to undertake an independent third-party technical review of the Solar Ancillary Services Study methodology and to include the results of the review and any revisions to the methodology in its future avoided cost proceeding.[2] The Duke Utilities are working to engage an independent third-party to review the Solar Ancillary Services Study in a manner consistent with the requirements of the NCUC Order and the Settlement Agreement in the Duke SC 2019 Avoided Cost Proceeding.

The Settlement Agreement also states that this independent review of the Solar Ancillary Services Study should take into consideration the Act 62 Integration Study, "***to the maximum extent possible***." Given the narrow, detailed scope of the Solar Ancillary Services Study and the timing

[1] *See* Partial Settlement Agreement, approved by Order No. 2019-881(A), issued on January 2, 2020.

[2] *See* Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities issued by the NCUC on April 15, 2020 (Docket No. E-100, Sub 158).

of the independent review of the Solar Ancillary Services Study, it is unlikely that information from the Act 62 Integration Study will be available at the time the independent review is conducted. Moreover, at this time, it is uncertain whether the information gleaned from an Act 62 Integration Study would inform the technical review of the Solar Ancillary Services Study, which quantifies the ancillary service impact of integrating existing and future solar generation on the DEC and DEP systems. Given that both the Commission and the NCUC have already mandated an independent technical review of the Solar Ancillary Services Study, the Duke Utilities believe the Commission should wait to review the findings of this independent review, before ordering additional studies regarding the quantification of ancillary services impact.

b. NREL Carbon-Free Resource Integration Study

The Duke Utilities believe that the work contemplated for in the Act 62 Integration Study is well underway through a study that National Renewable Energy Laboratory ("NREL")[3] is conducting of the DEC and DEP systems. In 2019, Duke Energy contracted with NREL to conduct a Carbon-Free Resource Integration Study[4] to evaluate the planning and operational considerations of integrating increasing levels of carbon-free resources onto the DEC and DEP systems (the "NREL Study").

For Phase 1 of the study, NREL performed an analysis of the Carolinas' carbon-free resource integration capability. Phase 1 included the evaluation of 12 scenarios to examine the impact of increasing levels of solar photovoltaic (PV) generation on the DEC and DEP systems. Phase 1 also investigated the potential challenges that high levels of variable generation, particularly solar and wind, could pose to power system operations. This research is intended to help the Duke Utilities understand possible curtailment, ramping, and load-following requirements. The Phase 1 work was complete in January 2020.

Phase 2 of the NREL study is underway now and will examine the potential investments, transmission impacts, and other factors necessary to achieve carbon-free energy resource integration. This study is being informed by stakeholder input and will provide a more granular analysis to understand the integration, reliability and operational challenges and opportunities for integrating carbon-free resources and will inform future Integrated Resource Plans and planning efforts.

c. Additional Studies Recently Completed

In addition to the studies described above, the following studies have been conducted and are explained in more detail in the DEC and DEP 2020 IRP filings. Astrapé Consulting recently completed both a Resource Adequacy Study and a Storage Effective Load Carrying Capability ("ELCC") Study for DEC and DEP to analyze the capacity value of battery technology within each of the DEC and DEP systems. The ELCC study results provide the capacity value for battery

[3] NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

[4] Details of the study are available at: https://www.nrel.gov/grid/carbon-free-integration-study.html.

energy storage systems used in the DEC and DEP Integrated Resource Plans. The study examines the impact of both stand-alone battery storage and storage paired with solar resources. Further, Nexant, Inc. recently conducted a study for the Duke Utilities to determine the potential energy and demand savings that could be achieved by energy efficiency and demand-side management programs in the DEC and DEP service territories.

In addition, a detailed study was performed by Tierra Resource Consultants, Proctor Engineering Group and Dunsky Energy Consulting to examine the potential for additional winter demand-side peak savings through innovative rates initiatives combined with advanced demand response and load shifting programs for the Duke Utilities. DEC and DEP anticipate working with stakeholders in the upcoming months to investigate additional cost-effective programs identified through this effort.

## III. Conclusion

Given the broad nature of the Act 62 Integration Study and the extent of the work recently undertaken and to be undertaken in the near future by consultants for the Duke Utilities, DEC and DEP believe that the Commission should allow time for these studies to be discussed and the results to be fully evaluated, so that they may better inform the Commission, and interested stakeholders, with respect to what additional topics would be beneficial to be studied under the Act 62 Integration Study for the Duke Utilities.

The Duke Utilities look forward to participating in the upcoming Virtual Forum and discussing these topics in greater detail at that time.

Sincerely,

Rebecca J. Dulin

C: Parties of Record (via email)